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09/977,684

10/16/2001

Dong-Gyu Kim

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11/16/2005

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EXAMINER

DI GRAZIO, JEANNE A

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,684

Applicant(s)

KIM, DONG-GYU

Examiner

Jeanne A. Di Grazio

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 and 8-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6, 7 and 20-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 08/20/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claims

Claims 6-7 and 20-25 are pending. Claims 1-5 and 8-19 are withdrawn from consideration per Applicant's election of Species B, Figure 4, Claims 6-7 and 20-25 drawn to a method for fabricating a liquid crystal display in the reply filed on April 29, 2004.

Claims 6, 7 and 23 are amended per Amendment of August 26, 2005.

Priority

Priority to Korean Patent Application 2001-52829 (August 30, 2001) is claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent United States Patent 5,633,739 (to Matsuyama et al.) in view of United States Patent 5,568,293 (to Takao et al.).

As to claims 6 (amended), referring to Figures 11(a)-11(e), Matsuyama teaches and discloses steps for forming a color filter substrate in which in step 11(a), a black matrix (BM) is first formed on a substrate (SUB 2)(Applicant's "forming a black matrix on a substrate"), step 11(b) then shows the sequential forming of color filters (FIL(B), FIL(R) and FIL(G)) where the color filters are next to each other / neighbor each other and each filter has a flat central portion and a peripheral portion (Applicant's "sequentially forming a plurality of color filters neighboring each other on the substrate and the black matrix, each color filter having a flat central portion and a peripheral portion") and in steps 11(b) through 11(e) the peripheral portions of the color filters (FIL(B), FIL(R) and FIL(G)) overlap the black matrix and the peripheral portions of the color filters consistently taper downwards from the flat central portion towards the other color filters (Applicant's "wherein the peripheral portion overlaps the black matrix and is consistently tapered as advancing from an interface with the flat central portion toward the neighboring color filters").

Matsuyama does not appear to explicitly specify that wherein the peripheral portions of the neighboring color filters overlap each other.

Takao teaches and discloses a liquid crystal display having trapezoidal color filters formed from a low-temperature curing polyamino resin having a photosensitive group (Title, entire patent).

Takao illustrates, at least with reference to Figure 4A, peripheral portions of the color filters overlapping with peripheral portions of other color filters. Takao furthermore illustrates each color resin pattern having a peripheral portion that touches a black matrix (light intercepting

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layer 117 formed in conformity with gap between respective units of color pattern layers (Column 19, Lines 18-27).

Such a configuration contributes to alignment stability as a result of the elimination of stepped difference within the substrate plane when the color filters are arranged within a cell (Column 2, 9-13).

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Matsuyama in view of Takao for reduced alignment defect.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,633,739 (to Matsuyama et al.) in view of United States Patent 5,568,293 (to Takao et al.) and further in view of United States Patent 5,725,975 (to Nakamura et al.).

As to claim 7, Matsuyama does not appear to explicitly specify patterning the color filter material by using a mask having a transparent pattern, a semitransparent pattern and an opaque pattern, wherein the semitransparent pattern is used for forming the peripheral portion of each color filter.

Nakamura teaches a gradation mask and process for the production of the masks of three different regions varying in transparency (please see Figure 5B). In region "c" of Figure 5B, the transmittance of light of a wavelength of 365 nm was 100% while in region "b" transmittance was about 10% (Column 6, Lines 30-37). Nakamura also teaches that this gradation mask is very suitable for the manufacturing of color filters comprising a plurality of colored pixels (Column 6, Lines 61-63). The teaching of Nakamura suggests that this type of gradation mask is suitable for

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the formation of color filters because light of a given wavelength can be transmitted depending on the region or area of the mask (thus a color filter, green, blue, or red could be formed depending on the degree of transparency of a given region) and this mask would be very efficient for the formation of color filters because each color filter could be manufactured at one time without the need for separate masks. Nakamura states that such a gradation mask can be produced “with high accuracy and efficiency and at a low cost (Column 2, Lines 24-29).

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Matsuyama in view of Nakamura for the formation of color filters such that light of a given wavelength can be transmitted depending on the region or area of the mask (thus a color filter, green, blue, or red could be formed depending on the degree of transparency of a given region) and this mask would be very efficient for the formation of color filters because each color filter could be manufactured at one time without the need for separate masks (resulting in high efficiency and low cost).

Claims 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,633,739 (to Matsuyama et al.) in view of United States Patent 5,568,293 (to Takao et al.) and further in view of United States Patent 6,567,150 B1 (to Kim).

As to claim 20, Matsuyama does not appear to explicitly specify the steps of forming a plurality of gate lines on the substrate, forming a plurality of data lines on the substrate, wherein the plurality of gate lines and the plurality of data lines define a plurality of pixel regions, forming a thin film transistor in each pixel region, the thin film transistor comprising a source

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electrode, a drain electrode and a gate electrode, and forming a pixel electrode in each pixel region, the pixel electrode connected to the drain electrode.

Kim teaches and discloses a liquid crystal display and method for its manufacture wherein a conventional liquid crystal display panel typically includes switching elements and bus lines for generating an electric field for driving the liquid crystal, pixel electrodes formed on a transparent substrate, the pixel electrodes are opposite to the common electrode formed on the color filter panel and which function to generate an electric field applied to the liquid crystal, signal bus lines that run along a column direction of an array of the pixel electrodes, and data bus lines that run along a row direction of the array of pixel electrodes, a thin film transistor (TFT) formed at the corner of the pixel electrodes which applies an electromagnetic field to the pixel electrode, and wherein a gate electrode of the TFT is connected with the signal / gate bus line and a source electrode is connected with the data / source bus line and a drain electrode of the TFT is connected to the pixel electrode (Column 1, Lines 50-67 and Column 2, Lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Matsuyama in view of Kim in order to apply appropriate electric fields to the display so that the display could be driven.

As to claim 21, it may be presumed that a color filter overlaps a data line (Kim, Column 1, Lines 50-67 and Column 2, Lines 1-3).

As to claim 23, Kim also discloses the steps of forming a black matrix on a substrate and common electrode on the plurality of color filters (Column 1, Lines 50-67 and Column 2, Lines 1-3).

As to claims 22, 24 and 25, Matsuyama does not appear to explicitly specify that wherein the peripheral portions of the second color filter overlap the peripheral portion of the first color filter, wherein the plurality of color filters comprise a first color filter and a second color filter, the second color filter neighboring and overlapping the first color filter over the black matrix and wherein the peripheral portion of the second color filter overlaps the peripheral portion of the first color filter.

Takao teaches and discloses a liquid crystal display having trapezoidal color filters formed from a low-temperature curing polyamino resin having a photosensitive group (Title, entire patent).

Takao illustrates, at least with reference to Figure 4A, peripheral portions of the color filters overlapping with peripheral portions of other color filters. Takao furthermore illustrates each color resin pattern having a peripheral portion that touches a black matrix (light intercepting layer 117 formed in conformity with gap between respective units of color pattern layers (Column 19, Lines 18-27).

Such a configuration contributes to alignment stability as a result of the elimination of stepped difference within the substrate plane when the color filters are arranged within a cell (Column 2, 9-13).

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Matsuyama in view of Takao for reduced alignment defect.

Response to Arguments

Applicant's arguments with respect to said claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

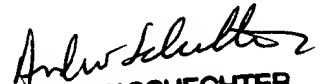
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio
Patent Examiner
Art Unit 2871

JDG


ANDREW SCHECHTER
PRIMARY EXAMINER